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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/727,748	11/30/2000	Prathap Haridoss	10964-043001/ Case 629	4182

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EXAMINER

CANTELMO, GREGG

ART UNIT PAPER NUMBER

1745

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/727,748

Applicant(s)

HARIDOSS ET AL.

Examiner

Gregg Cantelmo

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2006 and 22 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5,21,22 and 25-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,21,22 and 25-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 22, 2006 has been entered.

### ***Response to Amendment***

2. In response to the amendment received April 21, 2006 and entered as per the RCE filed May 22, 2006:

- a. Claims 1-5, 21-22 and 25-32 are pending.
- b. The prior art rejections of record stand in the absence of a clear definition of the claimed mechanical bonding.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5, 21-22 and 25-32 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A clear disclosure of what the mechanical bonding entails critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527

Art Unit: 1745

F.2d 1229, 188 USPQ 356 (CCPA 1976). The process fails to be reasonably and clearly described so as to understand what processes provide mechanical bonding nor what specifically the instant application considers to be mechanical bonding.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5, 21-22 and 25-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "mechanically bonded" in the claims is a relative term which renders the claim indefinite. The term "mechanically bonded" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The specification makes brief mention of this phrase but does not describe the process(es) employed to obtain this type of bonding nor defines what the term itself encompasses. Thus it is unclear as to what the term is limited to in the claimed invention and held to be vague and indefinite.

#### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 21-22 and 25-32 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,017,663 (Breault), of record.

Breault discloses a fuel cell electrode comprising a catalyst, a first material of tungsten oxide (same first material as identified in the instant claims and thus inherently resistant to oxidation up to about 3 volts vs. SHE) and a non-electrolytic material different than the catalyst (col. 2, line 66 through col. 3, line 5 and prior art claim 6). The catalyst is distributed on the graphite *and tungsten oxide* (see prior art claim 1). The catalyst load is  $0.25 \text{ mg/cm}^3$  (col. 3, ll. 40-45). The weight of the mixed catalyst and tungsten oxide is 80% with the balance being the Teflon polymer (col. 3, ll. 1-5 as applied to claims 1 and 21). The non-electrolytic material in this example is 20 weight percent Teflon i.e., polytetrafluorethylene (col. 3, ll. 3 as applied to claims 7, 8 and 10). Alternatively the non-electrolytic material can be FEP-120 which is a copolymer of tetrafluoroethylene and hexafluoropropylene (col. 2, ll. 55-60 as applied to claims 1 and 21).

The catalytic material and non-electrolytic material are both provided in the electrode and have an inherent degree of mechanical bonding or adhesion so that all of the constituents within the electrode remain in the electrode array itself. Furthermore upon assembly of the fuel cell, pressing or compaction of the electrodes, electrolyte and separators provides a force which would provide an inherent degree of mechanical bonding between materials in the anode.

Also, the claim does not specify what is or is not the "non-electrolytic material". Thus in the alternative, the Teflon in the catalyst-polymer mixture described in col. 3, ll.

Art Unit: 1745

1-10 is non-electrolytic and acts as a support carrier for the catalyst material. Thus the two would be mechanically bonded to one another.

As discussed above the term "mechanically bonded" is a vague and indefinite term used in the instant application. It is broadly held that any type of adhesion or deposition or combining of materials into a composite solid mass will inherently exhibit some degree of mechanical or physical bonding or adhesion to the components within the electrode absent clear evidence to the contrary and absent a clear definition of the term as used in the instant application (as applied to claims 1 and 21).

A first resistant material of tungsten oxide is also present in the electrode mixture. The noble metal catalyst is mixed with the tungsten oxide. Since the material is the same as those set forth in the species of the instant claims, the tungsten oxide in the prior art composition is expected to have the same properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). .See col. 3, ll. 3 and col. 3, ll. 26-31 of Breault as applied to claims 1 and 21).

The catalysts are Pt and Ru which are capable of catalyzing oxidation of a fuel cell gas and capable of undergoing reversible oxide formation (col. 3, ll. 1-2 as applied to claims 2, 4, 5 and 22).

The fuel cell gas inherently comprises hydrogen (as applied to claim 3).

The catalyst total weight is 64% (col. 3, ll. 1-5 as applied to claims 25 and 29).

The first material is tungsten oxide (as applied to claims 26-28 and 30-32).

### ***Response to Arguments***

6. Applicant's arguments filed April 21, 2006 have been fully considered but they are not persuasive.

Applicant argues that there is no "mechanical bonding" between the catalytic material and non-electrolytic material in the electrode of Breault.

This argument is not persuasive for the following reasons:

First, the term "mechanically bonded" is not reasonably described in the instant application so as to ascertain what exactly this term encompasses. In addition, there is/are no process(es) described to understand specifically how the instant application applies this term nor is there any sufficient description of what structural products result from this claimed and vaguely disclosed term. Thus the phrase itself fails to meet the statues of 35 USC 112 1<sup>st</sup> and/or 2<sup>nd</sup> paragraph.

Secondly, the catalytic material and non-electrolytic material of Breault are both provided in the electrode and have an inherent degree of mechanical bonding or adhesion so that all of the constituents within the electrode remain in the electrode array itself. Furthermore upon assembly of the fuel cell, pressing or compaction of the

Art Unit: 1745

electrodes, electrolyte and separators provides a force which would provide an inherent degree of mechanical bonding between materials in the anode. As discussed above the term "mechanically bonded" is a vague and indefinite term used in the instant application. It is broadly held that any type of adhesion or deposition or combining of materials into a composite solid mass will inherently exhibit some degree of mechanical or physical bonding or adhesion to the components within the electrode absent clear evidence to the contrary and absent a clear definition of the term as used in the instant application.

Lastly, the claim does not specify what is or is not the "non-electrolytic material". Thus in the alternative, the Teflon in the catalyst-polymer mixture described in col. 3, ll. 1-10 is non-electrolytic and acts as a support carrier for the catalyst material. Thus the two would be mechanically bonded to one another.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 1745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Gregg Cantelmo". The signature is fluid and cursive, with the first name "Gregg" and last name "Cantelmo" clearly distinguishable.

gc  
July 18, 2006

Gregg Cantelmo  
Primary Examiner  
Art Unit 1745